

## DISPENSER

### Cross-References to Related Applications

This application claims priority under 35 U.S.C. § 119(e) to, and hereby incorporates  
5 by reference, U.S. Provisional Application No. 60/497,585, filed 25 August 2003.

### Background

#### 1. Field of the Invention

This invention relates to dispensers and, in particular, this invention relates to devices  
10 which are attachable to containers for dispensing a substantially flowable material urged from  
the containers, and which can be resealed between uses.

#### 2. Background

Containers for many flowable materials, such as glue and other adhesives, must often  
15 be sealed between uses and must further aid in dispensing the flowable materials onto  
surfaces in desired amounts. To this end, these containers often include a resealable dispenser  
which is threadably attached to a container. To be resealed, these dispensers often have a cap  
attached by a loop or similar structure to an elongated dispenser neck. Even when in a closed  
position, thereby sealing the container, the cap can often be easily rotated, thereby  
20 compromising the seal. These rotatable caps are also less desirable to consumers because  
they are not uniformly oriented in display cases. Moreover, in situations where persons  
frequently use these containers, it is more efficient time-wise when the same manual motions  
can be used to remove and replace the caps from the dispensers. Hence, rotatable caps are

also less desirable functionally because dispensers with different orientations usually cannot be opened and closed with repeated similar manual motions. These easily rotatable caps also usually lack any other structure further promoting an airtight seal.

Present dispensers also often include structures within the dispensers, which open and  
5 close the pathway for delivering the flowable materials. While these dispensers have the advantage of usually not requiring a separate cap, they are subject to clogging when materials left in the dispenser pathways are partially dried.

There is then a need for a dispenser with a fixed, non-rotational sealing cap and which  
is easily resealed between uses. There is a particular need for a dispenser with a fixed, non-  
10 rotational sealing cap and which has a pathway from which obstructions can be easily cleared.

#### Summary of the Invention

This invention substantially fulfills the aforementioned needs by providing a dispenser with a fixed, non-rotational sealing cap, which is easily sealed between uses, and which has a  
15 pathway from which obstructions are readily and easily cleared. The instant invention provides a dispenser and associated methods of use and manufacture for a flowable product or material urged from a container. The dispenser may be reversibly attachable to the container, e.g., by threads. In one embodiment, the present dispenser includes a base, first and second members, and a cap. The base may be attachable to the container. The first member may be  
20 attachable to the base and may include a generally frustoconical extension with a tapered tip. The cap may have a lower edge radially extending from the extension. The first member may define a pathway for the flowable material when the flowable material is urged from the container. The second member may be disposable about the first member extension. The cap

may be hinged to the second member. The cap may include a mating structure to ensure that an airtight seal is effected when the cap is in a closed position. The present dispenser may also include one or more other mating structures, which maintain the instant cap in a defined, constant non-rotational orientation.

5 It is a feature of the present dispenser to define a pathway which is easily accessed throughout.

It is an advantage of the foregoing feature that obstructions can be easily and quickly cleared from the pathway.

It is another feature of the present dispenser to include at least one mating structure.

10 It is an advantage of the foregoing feature that the present dispenser sealing cap is uniformly oriented.

It is another advantage of the foregoing feature that containers with the instant dispenser present a more desirable appearance in displays.

15 It is yet another advantage of the foregoing feature that containers are more easily and efficiently opened and closed.

It is still another advantage of the foregoing feature that one aspect of the mating structure may enable an airtight seal between the cap and the remainder of the dispenser.

These and other objects, features, and advantages of this invention will become apparent from the description which follows, when considered in view of the accompanying drawings.

#### Brief Description of the Drawings

Figure 1 is a side view of one assembled embodiment of the present dispenser, the cap

thereof in a closed position;

Figure 2 is a perspective view of the assembled dispenser of Figure 1, the cap thereof in an open position;

Figure 3 is a bottom view of the present assembled dispenser of Figure 1, the cap  
5 thereof in the open position;

Figure 4 is a perspective view of the base of the dispenser of Figure 1;

Figure 5 is a bottom view of the base of Figure 4;

Figure 6 is a perspective view of a first member of the dispenser of Figure 1;

Figure 7 is a bottom view of the first member of Figure 6;

10 Figure 8 is a top view of a second member and attached cap of the dispenser of Figure  
1; and

Figure 9 is a bottom view of the second member and cap of Figure 8.

It is understood that the above-described figures are only illustrative of the present invention and are not contemplated to limit the scope thereof.

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#### Detailed Description

Any references to such relative terms as inner and outer, upper and lower, or the like, are intended for convenience of description and are not intended to limit the present invention or its components to any one positional or spatial orientation. All dimensions of the  
20 components in the attached figures may vary with a potential design and the intended use of an embodiment of the invention without departing from the scope of the invention.

Each of the features and methods disclosed herein may be utilized separately or in conjunction with other features and methods to provide improved dispensers and methods for

making and using the same. A representative example of the present invention, which utilizes many of these features and methods, will now be described in detail with reference to the drawings. This detailed description is merely intended to teach a person of skill in the art further details for practicing preferred aspects of the present teachings and is not intended to 5 limit the scope of the invention. Therefore, combinations of features and methods disclosed in the following detailed description may not be necessary to practice the invention in the broadest sense, and are instead taught merely to particularly describe a representative and preferred embodiment of the invention.

The present dispenser may reversibly attach to a container and may be advantageously 10 used to dispense a substantially flowable material, such as glue or another adhesive, from the container. The dispenser may include mating structures, which help maintain airtight seals necessary to preserve the material being stored and dispensed. The mating structures also insure that the caps functionally present on the dispenser will be uniformly oriented. Uniform orientation is desirable to consumers viewing displays of the containers and dispensers. 15 Uniform orientation is also desirable to persons frequently opening and closing the dispensers because similar motions and manipulations are required to open and close the dispensers. Moreover, the instant dispenser provides a channel for the material which is easily cleaned, thereby curing clogging problems which would otherwise arise.

One assembled embodiment of the present dispenser is depicted in Figures 1-3 generally at 100 and includes a base (collar) 102, a first member (cone) 104, a second member (cover) 106, and a sealing member such as a cap 108. The instant dispenser, and many components thereof, may be described by an axis 110. It can be seen in Figures 1-5 that the base 102, in turn, includes an upper member 112 unitarily (or otherwise integrally) joined to a

cylindrical element 114. The upper member 112 displays respective upper and lower surfaces 118 and 120, defines a generally coaxial opening 122 and includes a mating structure such as a plurality (e.g., a pair) of tabs 124, which are generally opposed in the embodiment shown. Externally, the upper member 112 adjoins the cylindrical element 114 at a bevel 126.

5       The bevel 126 may be between about 40 degrees and 50 degrees or about 45 degrees in some aspects of the invention. The cylindrical element 114 displays an outer surface 128, an inner surface 130, and a lower rim 132. A plurality of gripping surfaces, such as ribs 134, may extend from the outer surface 128 and a connecting structure, such as a plurality of threads 136, may be defined by the inner surface 120. A person of ordinary skill in the art 10 will readily recognize that other connecting structures may be suitable for other embodiments. Moreover, it is contemplated that, in some embodiments, the present invention may be permanently attached to the container. In the embodiment shown, the ribs 134 unitarily (or otherwise integrally) and orthogonally adjoin the rim 132.

As best viewed in Figures 1-3 and 6-7, the first member 104 includes a lower flange 146, respective first and second elements 148 and 150, and an upper extension 152. The lower flange 146 includes a mating structure, such as a plurality (e.g., pair) of slots 154, and displays respective upper and outer surfaces 156 and 158 and an outer rim 160. Obviously, the tabs 124 and slots 154 could be interchanged.

The generally frustoconical first element 148 unitarily (or otherwise integrally) adjoins 20 the lower flange 146, displaying an upper surface 164, and outer surface 166, and an inner surface 168. The first element outer surface 166 adjoins the lower flange upper surface 156 at a bevel 170.

The second generally frustoconical element 150 is disposed coaxially to the first

element 148 and displays respective upper, lower, outer and inner surfaces 174, 175, 176, and 178. In the embodiment shown, the second element is stepped inwardly from the first element 148. A mating structure, such as a plurality (e.g., pair) of slots 180, are defined to adjoin the upper surface 174 and the outer surface 176. The slots 180 are expressed as tabs 182 extending from the inner surface 178 and the lower surface 175. The inner surfaces 168 and 178 of the first and second elements 148 and 150 and the lower surface 175 of the second element 150 define a cavity 184.

A third element, such as a generally frustoconical upper extension 152 displays an outer surface 186 and an inner surface 188 and includes a tip 190. The tip 190, in turn, displays an upper surface 192, which adjoins a bevel 194, the bevel 194 terminating at a lower rim 196. The lower rim 196 may extend generally radially from adjacent surfaces on the upper extension 152. The inner surface 188 defines a generally coaxial bore 198. The bore 198 adjoins the cavity 184 and opens to admit a substantially liquid substance being forced from the cavity 184.

As best viewed in Figures 1-3 and 8-9, the second member (cover) 106 includes respective first and second elements 200 and 202. The element 200, in turn, displays an upper surface 203, an outer surface 204, an inner surface 206, and a lower rim 208. A mating structure, such as a plurality (e.g., pair) of tabs 210 depend from the lower surface 208 in the embodiment depicted. Obviously the slots 180 and tabs 210 could be interchanged. The element 202 displays an upper surface 214, which extends radially from a rim 215. The element 202 further displays an exterior surface 216, defines another mating structure such as a generally circumferential groove 218, and includes an inner surface 220. The inner surface 220 defines a bore 222, the bore 222 dimensioned to accommodate the upper extension 152

therewithin.

In the embodiment shown, the cap 108 is attached to the second member 106 by a flexible hinge 226 and includes a cap element 128, an extension 130, and a stopper element 132. The hinge 226 may be formed simultaneously with the second member 106 and cap 108, 5 e.g., by injection molding. Still another mating structure such as a generally circumferential rim 234 is defined proximate a junction between an interior surface 236 and a lower surface 238. The cap 108 is dimensioned so that the rib 234 is accommodated within the second member groove 218 and the lower surface 238 contacts the second member upper surface 203 when the cap 108 is in a closed position. Obviously, the rib 234 and groove 218 could be 10 easily interchanged. The stopper element 232 is dimensioned to be accommodated within the tip bore 198 when the cap 108 is in a closed position as well.

Suitable materials for the present dispenser include polyethylene and polypropylene. However, other suitable materials can be found in the Handbook of Plastics, Elastomers, and Composites, Third Edition, Charles A. Harper, Editor-in-Chief, McGraw-Hill, New York 15 (1996), the entire disclosure of which is hereby incorporated by reference. Individual components of the present dispenser may be formed by processes such as injection molding utilizing the foregoing materials.

The present dispenser is assembled by extending the first member 104 through the base collar opening 122 until the flange upper surface 156 contacts the base collar lower 20 surface 120 and the tabs 124 are accommodated in the flange slots 154. The second member 106 is forced into position, wherein the upper extension 152 is accommodated within the bore 222 and the second member tabs 210 are accommodated in the first member slots 180. The cap 108 is closed by being pressed against the second member 106 until the cap rib 234 is

disposed within the second member circumferential groove 218 and until the cap stopper element 232 is disposed within the upper extension bore 198, thereby effecting a seal to prevent volatile ingredients within the flowable material from evaporating.

The instant mating structures help insure that assembled elements remain in a desired  
5 non-rotational orientation and that assembled elements further maintain the vapor-tight seal necessary to preserve the flowable material being stored and dispensed from the container. The fixed non-rotational relation ensures that the dispenser caps when present on containers will be oriented in substantially identical positions. The substantially identical positions are aesthetically desirable to consumers in displays. These substantially identical positions are  
10 also advantageous to persons frequently opening and closing containers when dispensing materials therefrom.

Functionally, the assembled present dispenser is attached to a container by threading the base 102 onto a container until a snug, airtight seal is effected by in part by contact between the base lower surface 120 and the first member flange 146 and between the first  
15 member flange 146 and the container. The airtight seal is also effected when the cap 108 is in a closed position as described above. To dispense the material from the container, the cap 108 is displaced from the closed position to an open position. The cap 108 may be displaced from the closed position to the open position by an upward force exerted on the extension 230, e.g., by a user's digit. The upward force displaces the stopper element 232 from the upper extension bore 198 and also displaces the cap rib 234 from the second member groove 218. The substantially flowable material may be then forced from the container through the first member cavity 184 and the upper extension bore 198 and dispensed on a surface at a desired location. The flowable material is forced or urged from the container, for example, by

squeezing the sides of the container or by using a plunger (if present). After use, the cap is replaced as described above to reseal the container and prevent the material within the container from deterioration due to evaporation.

A person or ordinary skill in the art will readily recognize that other equivalents can be  
5 utilized in place of the mating structure embodiments disclosed and described herein.  
Therefore, the instant invention is not limited to the specific embodiments of the mating  
structures disclosed and described.

Because numerous modifications of this invention may be made without departing  
from the spirit thereof, the scope of the invention is not to be limited to the embodiments  
10 illustrated and described. Rather, the scope of the invention is to be determined by the  
appended claims and their equivalents.